

*Amendments to the Claims\**

This listing of claims will replace all prior versions, and listings of claims in the application.

1-37. (cancelled)

<sup>1</sup> ~~38.~~ (currently amended) An isolated nucleic acid molecule comprising a polynucleotide selected from the group consisting of:

a. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 689 in SEQ ID NO:85;

b. a polynucleotide sequence encoding a polypeptide comprising amino acids from about 1 to about 689 in SEQ ID NO:86;

c. a polynucleotide sequence encoding a polypeptide that is at least 95% identical to the polynucleotide sequence of (a) or (b); and

d. a polynucleotide sequence fully complementary to the polynucleotide sequence of (a), (b) or (c) encoding a polypeptide,

wherein said polypeptide methylates DNA in an *in vitro* assay.

<sup>2</sup> ~~39.~~ (previously presented) The nucleic acid molecule of claim <sup>1</sup>~~38~~, wherein said polynucleotide is that of part (a).

<sup>3</sup> ~~40.~~ (previously presented) The nucleic acid molecule of claim <sup>1</sup>~~38~~, wherein said polynucleotide is that of part (b).

\* The claims presented here, presume that the Amendment filed March 20, 2007 was entered.

~~4~~ 41. (previously presented) The nucleic acid molecule of claim ~~38~~<sup>1</sup>, wherein said polynucleotide is that of part (c).

~~5~~ 42. (previously presented) The nucleic acid molecule of claim ~~38~~<sup>1</sup>, wherein said polynucleotide is that of part (d).

43-44. (cancelled)

~~6~~ 45. (previously presented) A method of making a recombinant vector comprising inserting an isolated nucleic acid molecule of Claim ~~38~~<sup>1</sup> into a vector selected from a group consisting of:

- a. a DNA vector; and
- b. an RNA vector.

~~7~~ 46. (previously presented) A recombinant vector comprising the isolated nucleic acid molecule of Claim ~~38~~<sup>1</sup>.

~~8~~ 47. (currently amended) A method of making ~~[[a]]~~ an isolated recombinant host cell comprising introducing the recombinant vector of Claim ~~46~~<sup>7</sup> into ~~[[a]]~~ said host cell.

~~9~~ 48. (currently amended) ~~[[A]]~~ An isolated recombinant host cell comprising the vector of Claim ~~46~~<sup>7</sup>.

<sup>10</sup>  
~~49.~~ (currently amended) A method for producing a *de novo* DNA cytosine methyltransferase polypeptide, comprising culturing the isolated recombinant host cell of Claim <sup>9</sup>~~48~~ under conditions such that said polypeptide is expressed and recovering said polypeptide.

50. (cancelled)

<sup>11</sup>  
~~51.~~ (currently amended) An isolated nucleic acid molecule comprising a polynucleotide selected from the group consisting of:

- a. a polynucleotide sequence encoding mouse Dnmt3a2 polypeptide contained in ATCC Deposit No. PTA-4611;
- b. a polynucleotide sequence encoding human DNMT3A2 polypeptide contained in ATCC Deposit No. PTA-4610;
- c. a polynucleotide sequence encoding a polypeptide at least 95% identical to the polynucleotide sequence of (a) or (b); and
- d. a polynucleotide sequence fully complementary to the polynucleotide sequence of (a), (b) or (c) encoding a polypeptide,

wherein said polypeptide methylates DNA in an *in vitro* assay.

<sup>12</sup>  
~~52.~~ (previously presented) The nucleic acid molecule of claim <sup>11</sup>~~51~~, wherein said polynucleotide is that of part (a).

<sup>13</sup>  
~~53.~~ (previously presented) The nucleic acid molecule of claim <sup>11</sup>~~51~~, wherein said polynucleotide is that of part (b).

<sup>14</sup>  
~~54.~~ (previously presented) The nucleic acid molecule of claim <sup>11</sup>~~51~~, wherein said polynucleotide is that of part (c).

<sup>15</sup>  
~~55.~~ (previously presented) The nucleic acid molecule of claim <sup>11</sup>~~51~~, wherein said polynucleotide is that of part (d).

<sup>16</sup>  
~~56.~~ (previously presented) The nucleic acid molecule of claim <sup>1</sup>~~38~~, wherein said nucleic acid molecule is expressed in embryonic stem cells.

<sup>17</sup>  
~~57.~~ (previously presented) The nucleic acid molecule of claim <sup>11</sup>~~51~~, wherein said nucleic acid molecule is expressed in embryonic stem cells.